



User's Manual

GEARView Basic 1.0 Study and Report Viewer

PACSGEAR™

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GEARView Basic

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Indications for Use

GEARView Basic is intended to be used by patients and healthcare personnel to review medical images and related results.

CAUTION: **GEARView Basic** is not labeled for diagnostic use.



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1 Welcome

GEARView™ Basic

Congratulations on adding **GEARView Basic™** to your PACS/EHR system. **GEARView Basic™** gives patients and healthcare personnel a simple way to view medical images and related results. When burned to media—CDs, DVDs, or USB flash drives—GEARView Basic creates a complete and portable medical record.

Features

- Displays a wide range of DICOM objects, including multiframe video clips, visible light images and structured reports.
 - Provides a robust set of image manipulation tools, including compare, cine, window/level, zoom/pan, annotations, customizable overlays and presets.
 - Safeguards images in transit with configurable password-protection and encryption based on the Advanced Encryption Standard (AES) algorithm.
 - Supports Web Access to DICOM Objects (WADO) for standards-based interoperability.
 - Requires no additional software or external licenses. Runs on Microsoft® Windows 2000, Windows XP, and Windows Vista® for ease of use—no administration required.
-

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1.1 Conventions Used in This Manual

Operating Procedures

Operating procedures employ the following conventions.

Convention	Indicates
Boldface type	Names of buttons.
<i>Italic type</i>	Names of on-screen objects other than buttons (usually menu commands).
Courier font	Typed text.
>	Sequence of procedures.

Clicking Cancel or No

This manual omits instructions on clicking Cancel or No buttons because it assumes that the user knows, or can determine from context, the function of those buttons where they appear. In general, a Cancel or No button closes the dialog box or screen without performing the operation indicated in the dialog box or screen.





Definitions, Acronyms, and Abbreviations

The following acronyms, abbreviations, and terminology are used in PACSGEAR manuals.

Accession number	A tracking or order number for patient studies.
AE	<i>Application entity</i> . A local or remote DICOM device.
Burner	A digital recording device such as a CD recorder that stores data on media.
DICOM	<i>Digital imaging and communications in medicine</i> . A networking standard for the medical industry.
DOB	<i>Date of birth</i> .
DX	DICOM modality abbreviation for “digital mammography.”
EMR	<i>Electronic medical record</i> .
EHR	<i>Electronic health record</i>
LDAP	<i>Lightweight directory access protocol</i> . Used for looking up network services and addresses.
Media	Electronic storage media, such as CD-ROM and DVD.
Modality	Sources of data, such as from ultrasonography, MRI, PET, and CT.
PACS	<i>Picture archival and communication system</i> .
Pacs SCAN	General term for any Pacs SCAN product (Pacs SCAN Film, etc.)

Symbols

The following symbols are used in this manual.

CAUTION	Indicates information necessary to prevent damage or loss of data or equipment.
	<i>Consult instructions for use.</i> Appears on the product CD.
	<i>Conformité Européenne:</i> Indicates that the product complies with the requirements of the 93/42/EEC Medical Device Directive.
	Symbol for <i>manufacturer</i> .
	Symbol for <i>European authorized representative</i> .

1.2 Starting and Exiting GEARView Basic

Starting GEARView Basic

If **GEARView Basic** was included on the CD or other medium that contains studies, the program will usually start automatically when you insert the medium into a drive or port on the PC. If it does not start automatically, navigate to the folder containing the studies, and run *GEARView Basic.exe*.

If viewing images through an EHR, the program will launch automatically from the EHR provider.

A graphic (the “splash screen”) will appear showing you the product name. If this graphic does not appear, please contact PACSGEAR Support. After a few seconds, the splash screen disappears and either the Encryption Password dialog box or the patient list tab of the main program appears (see next chapter).

Exiting GEARView Basic

Click the Windows close button .

2 Basic Operations

If the medium you inserted into the PC contains only unencrypted studies, **GEARView Basic** automatically starts and displays the studies in the Patient List tab (see section 2.2). If the medium contains encrypted studies, you are prompted to decrypt the files according to the procedure below.

2.1 Decryption

When you insert the medium into the PC, **GEARView Basic** starts and displays the Encryption Password dialog box.

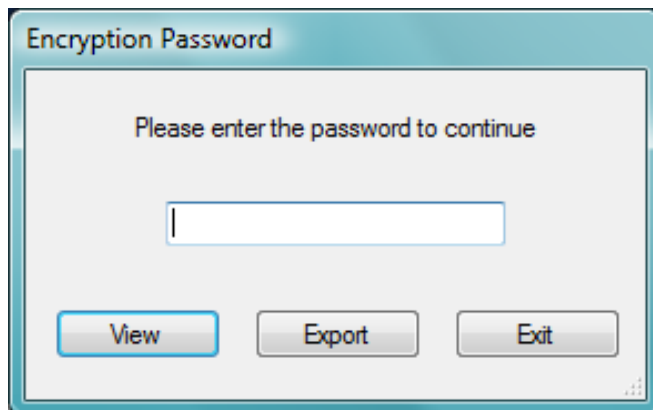


Figure 2.1 Encryption Password dialog box

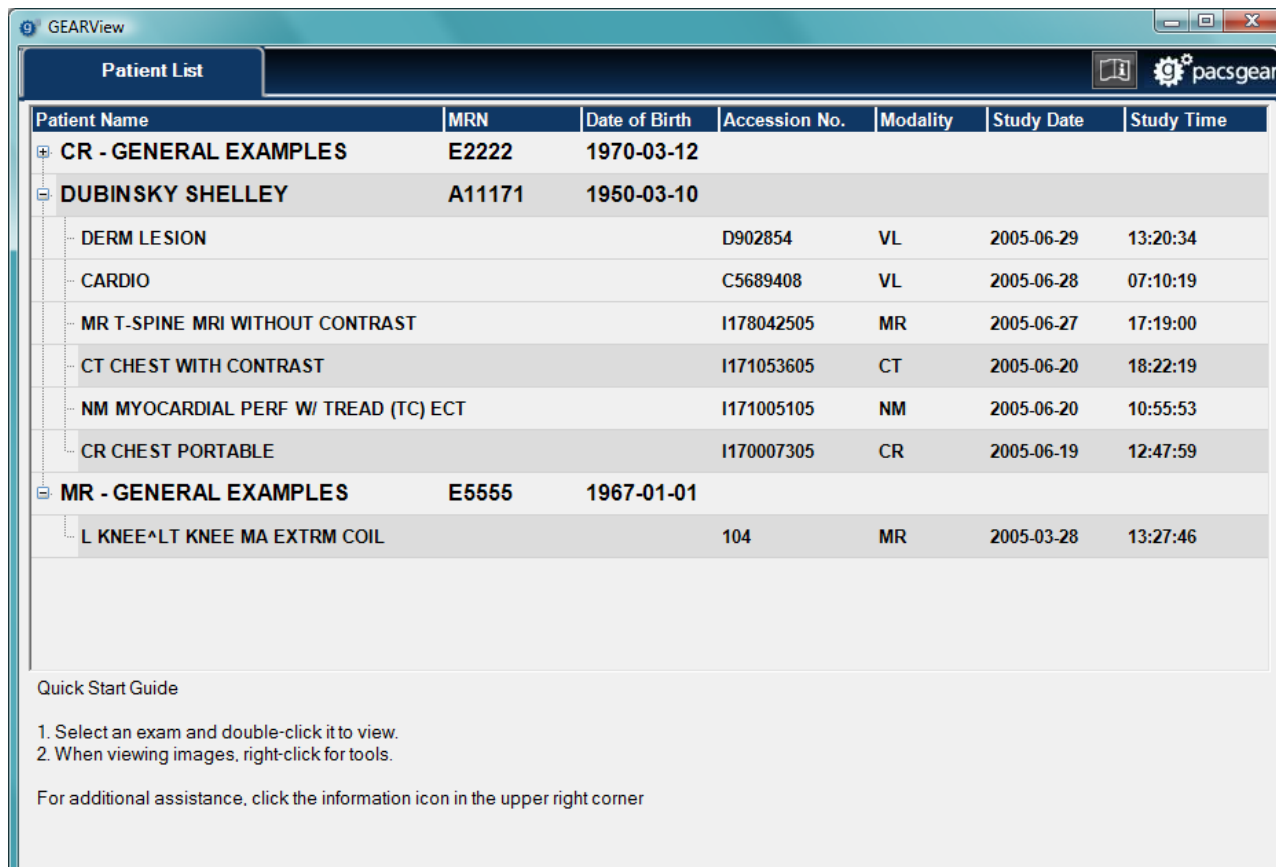
Enter the password (determined at burn time) into the box and click **View**. **GEARView Basic** decrypts the studies, copies them from the medium to the folder where **GEARView Basic** was installed, and opens them in the Patient List tab (see section 2.2). Alternately you can click **Export** to decrypt and copy the studies to a folder of your choice and exit **GEARView Basic**. After export, the folder will contain DICOM files that can be imported to PACS.

Password

In the **Password** box, enter the password specified in **MediaWriter's** Confirm Studies dialog box when the studies were originally burned.

2.2 Patient List Tab

If studies on a burned medium are not encrypted, or if they have been decrypted as described in section 2.1 above, they are ready for viewing. When **GEARView Basic** first opens, the Patient List tab is displayed.



Patient Name	MRN	Date of Birth	Accession No.	Modality	Study Date	Study Time
CR - GENERAL EXAMPLES	E2222	1970-03-12				
DUBINSKY SHELLEY	A11171	1950-03-10				
DERM LESION			D902854	VL	2005-06-29	13:20:34
CARDIO			C5689408	VL	2005-06-28	07:10:19
MR T-SPINE MRI WITHOUT CONTRAST			I178042505	MR	2005-06-27	17:19:00
CT CHEST WITH CONTRAST			I171053605	CT	2005-06-20	18:22:19
NM MYOCARDIAL PERF W/ TREAD (TC) ECT			I171005105	NM	2005-06-20	10:55:53
CR CHEST PORTABLE			I170007305	CR	2005-06-19	12:47:59
MR - GENERAL EXAMPLES	E5555	1967-01-01				
L KNEE^LT KNEE MA EXTRM COIL			104	MR	2005-03-28	13:27:46

Quick Start Guide

1. Select an exam and double-click it to view.
2. When viewing images, right-click for tools.

For additional assistance, click the information icon in the upper right corner

Figure 2.2 Patient List tab

The Patient List tab displays all of the studies that are available for viewing. Double-click any study in the Patient List tab to view the study in a new patient tab (see next section).

2.3 Patient Tabs

Each time you double-click a study for a new patient in the Patient List tab, a new patient tab is opened.

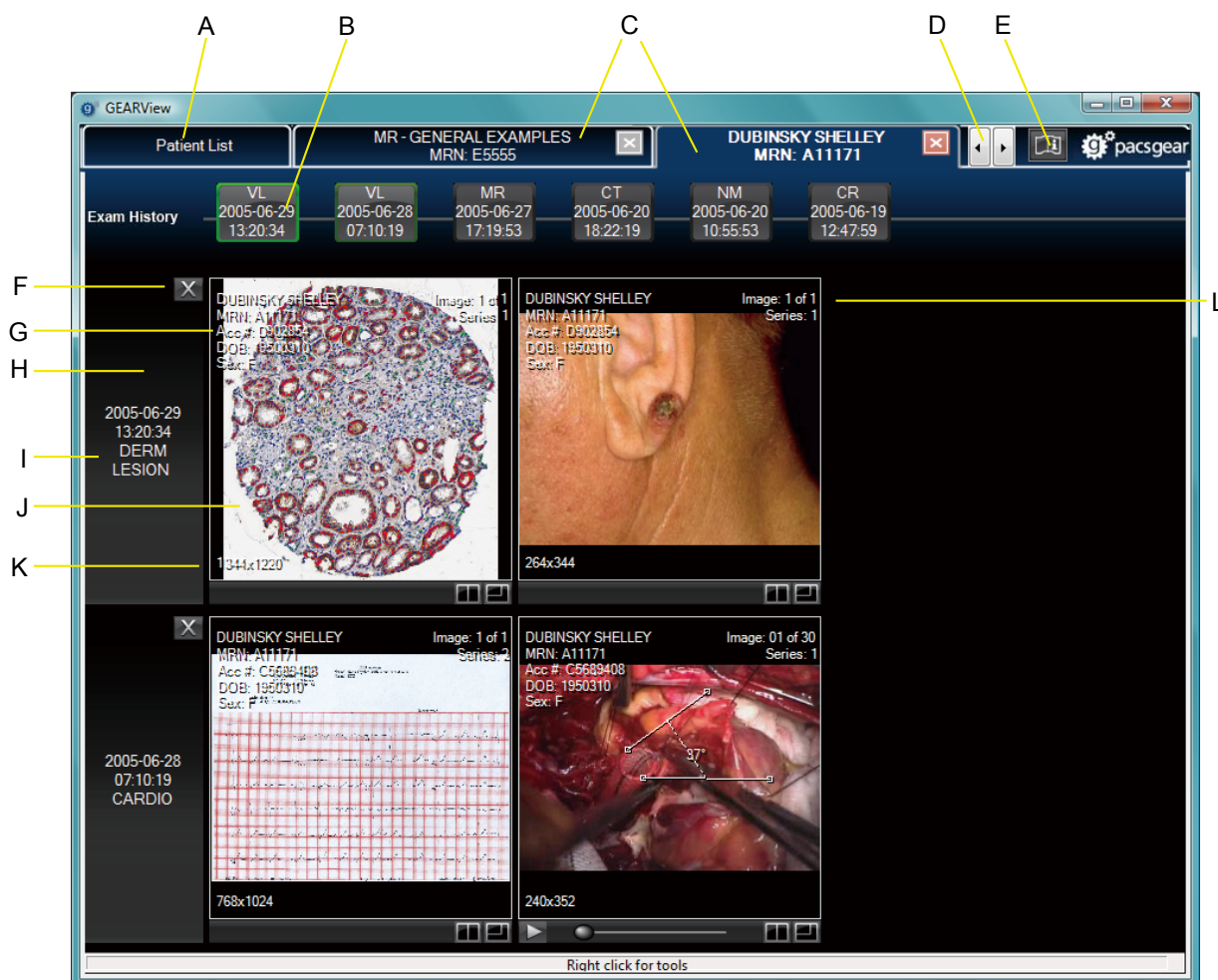


Figure 2.3 GEARView Basic with patient tabs open

The contents of the patient tabs and other parts of the program screen are described as follows.

- A** Patient List tab. Click to display the patient list.
- B** Exam history icons. An icon is displayed for each exam associated with the patient. Each icon shows the modality (VL, MR, CT, etc.) and date/time of the exam. Click an icon to display a new exam strip containing all series in the exam. If an opened exam strip is off screen, you can jump to it by clicking its exam history icon.
- C** Patient tabs. Double-click a patient in the patient list to open a new tab. To switch between opened patient tabs, simply click the desired tab. If a particular exam is not displayed in the tab, click one or more of the exam history icons.

- D** Tab scroll buttons. Click to move open tabs to the left or right.
- E** Help icon. Click to view the user's manual.
- F** Close button. Click to close the exam strip. At any time you can reopen the exam by clicking the appropriate exam history icon.
- G** An overlay of the main study information.
- H** Exam strip. The horizontal area containing all series in an exam.
- I** Exam information (the date/time and name of the exam). Double-click this area to open a basic information window.
- J** Series thumbnail (hereinafter, *thumbnail*). Each exam contains one or more series, and each series contains one or more images. Each series is shown as a thumbnail in the exam strip.
- K** An overlay of the size of the currently displayed image (in pixels).
- L** An overlay of the number of the currently displayed image. If a series contains multiple images, you can scroll through them using the mouse wheel.

Overlays

The text that is superimposed over images, such as in **G**, **K**, and **L** above, is called an *overlay*. To display or hide overlays, right-click the study's shortcut menu and click Text On/Off, or, press the **A** keyboard shortcut.

3 Viewing and Manipulating Images

GEARView Basic provides you with convenient tools to view and manipulate images. These tools differ depending on the type of image.

3.1 Window Controls

The following window controls are available.

Full Screen To open an image in a full-screen viewport, double-click its thumbnail in the exam strip or click the Full Screen button (see figure 3.1).

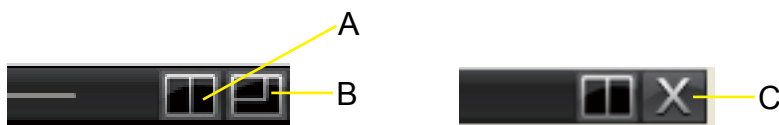


Figure 3.1 **A:** Compare button; **B:** Full Screen button; and **C:** Close button. The Close button is only visible if the image is displayed in Compare or Full Screen view.

Compare Click the Compare button (see figure 3.2) to open the image in a half-screen viewport. Click the Compare button of a second image to open the second image in a half-screen viewport in the other half of the screen. This easily enables comparison of two images.

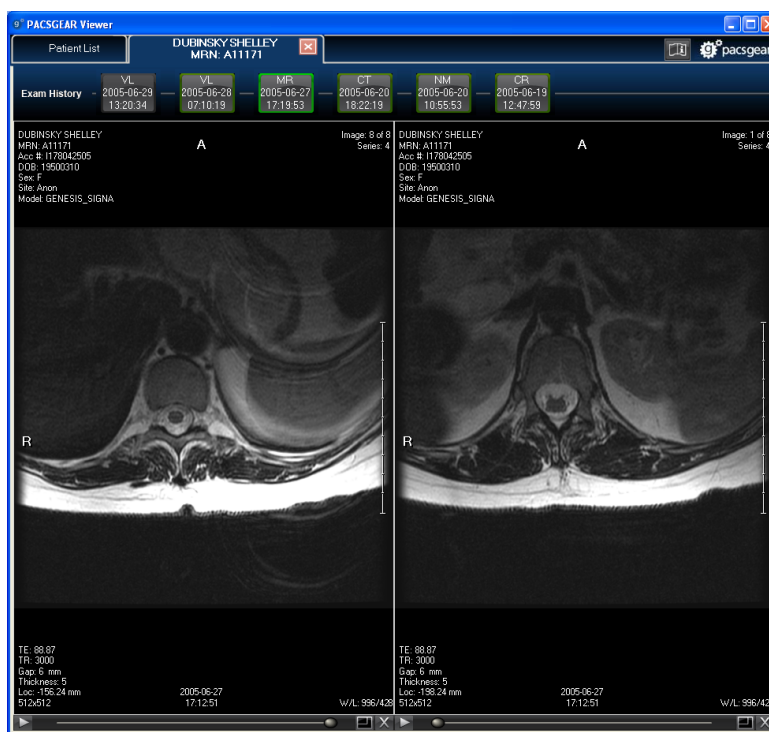


Figure 3.2 Compare view

- Close** Any time an image is opened in a full-screen or compare viewport you can return to thumbnail view by double-clicking the image again, or by clicking its Close button (see figure 3.1).
- Cine Images** This button is only available if the series contains more than one image. Click to automatically cine through all images in the series. After clicking, the button changes to a Pause button. Click Pause to pause the cine. You can also press C on the keyboard to Cine/Pause images.
- Cine slider** This slider is only available if the series contains more than one image. Drag the slider to the right or left to manually cine forwards or backwards through images in the series.

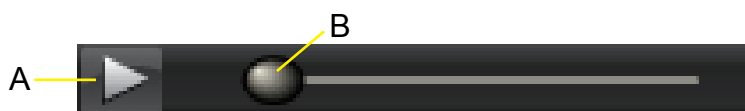


Figure 3.3 A: Cine Images button; and B: Cine slider

- SR paging** When a structured report (modality = SR) is opened in a full-screen viewport, two buttons appear at the bottom of the screen for paging the report forward and backward.

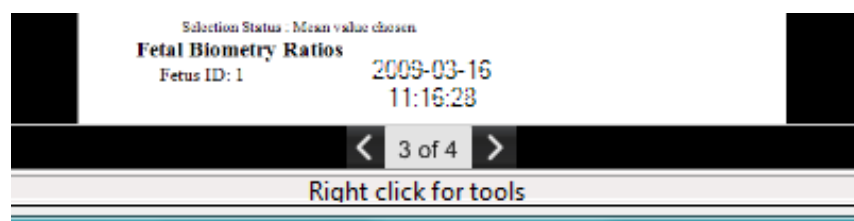


Figure 3.4 Click the left and right arrow buttons to page forward and backward

Linking Series

When two series are opened in compare viewports, their scrolling behavior becomes *linked* by default if they satisfy two conditions: 1) the series are from the same exam; and 2) the series reside on the same plane (as determined by the relevant DICOM patient orientation tags). When two series are linked, scrolling performed by the user on one of the series is likewise applied, to the extent possible, in the other series. Linked series are identified by the word “Linked” appearing at the lower left of each series. When linking is enabled, a “Link” command appears in each series’ shortcut menu that allows you to turn linking ON and OFF (see figure below).



Figure 3.5 Two linked series. The command "Link" becomes available in the shortcut menu.

PET-CT Fusion

When a PET series and CT series are opened side-by-side in compare viewports, **GEARView Basic** automatically superimposes the PET series with a copy of the CT series (the left series in the figure below). This is called *PET-CT Fusion*. You can select a transparency level (0%, 25%, 50%, 75%, or 100%) in the PET series shortcut sub-menu. To change the color schemes on the fused image, right-click and select a window/level preset.



Figure 3.6 PET-CT fusion

3.2 Shortcut Menu Commands

Open the shortcut menu by right-clicking an image or thumbnail.

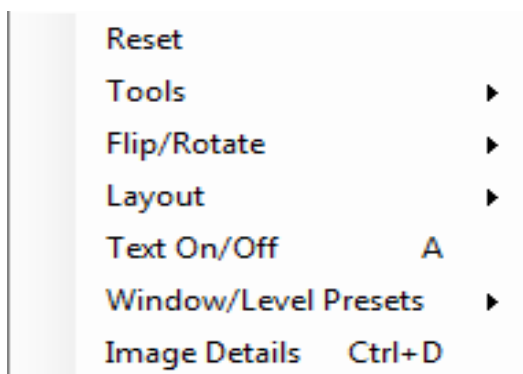


Figure 3.7 Shortcut menu for images in studies

Reset	Resets rotation to none, window/level to its original values from the DICOM file, and the invert state, and clears all measurements.
Tools	See Tools Shortcut Menu below.
Flip/Rotate	See Flip/Rotate Shortcut Menu below.
Layout	Only displayed when the image is open in a viewport. See Layout Shortcut Menu below.
Text On/Off	Displays or hides the text overlay.
Window/Level	See Window/Level Presets Shortcut Menu below.
Image Details	<p>Opens an Image Details window that displays patient, study, and other information associated with the image (see figure 3.6 below). Each piece of information corresponds to standardized DICOM fields, and is accompanied by the relevant field codes.</p> <p>To search for information, type a keyword in the <i>Find</i> box and click Find Next as many times as is necessary to jump to the desired item.</p>

Image Details

Find ☐ Show Private Groups

Tag	Value	Description
Patient Details		
(0010,0010)	DL ^S	Patient Name
(0010,0020)	A11171	Patient ID
(0010,0030)	19500310	Patient Birth Date
(0010,0040)	F	Patient Sex
Study Details		
(0008,0050)	D902854	Accession Number
(0020,000D)	1.3.6.1.4.1.23849.638439532.11.16...	Study Instance UID
(0020,0010)		Study ID
(0008,0020)	20050629	Study Date
(0008,0030)	142000	Study Time
(0008,1030)	DERM LESION	Study Description
Series Details		
(0020,000E)	1.3.6.1.4.1.23849.1377328443.11.1...	Series Instance UID
(0008,103E)	DERM LESION	Series Description
(0020,0011)	1	Series Number
(0008,0060)	VL	Modality
Image Details		
(0008,0008)	ORIGINAL\SECONDARY	Image Type
(0008,0016)	1.2.840.10008.5.1.4.1.1.7	SOP Class UID
(0008,0018)	1.3.6.1.4.1.23849.1377328443.11.1...	SOP Instance UID
(0008,0020)	20050629	Study Date
(0008,0022)	20050629	Acquisition Date
(0008,0030)	142000	Study Time
(0008,0032)	142000	Acquisition Time
(0008,0050)	D902854	Accession Number

Figure 3.6 Image Details window

Tools Shortcut Menu

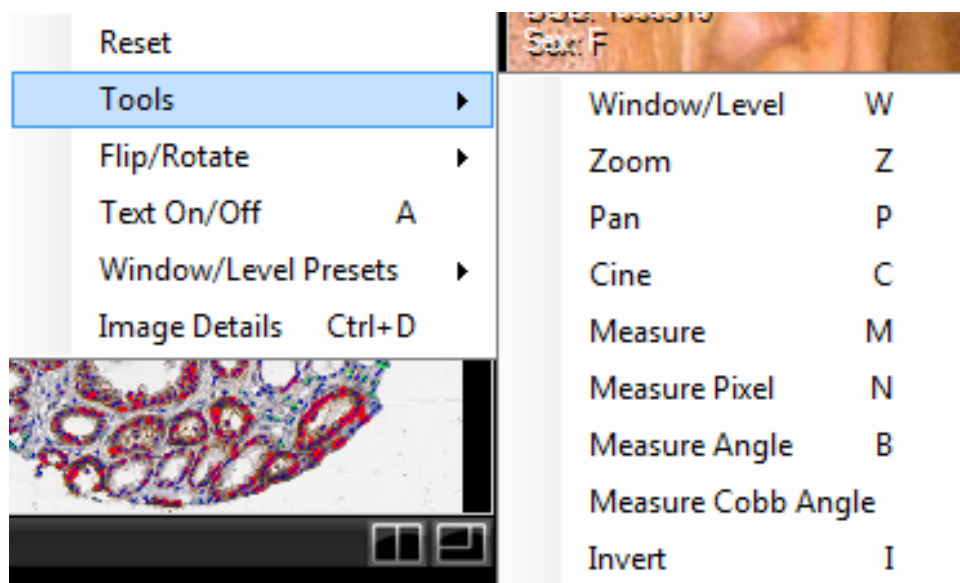


Figure 3.7 Tools shortcut menu

- Window/Level** Changes the cursor to the window/level cursor. Drag the cursor horizontally or vertically over an image or thumbnail to adjust the window or level, respectively.
- Zoom** Changes the cursor to the zoom cursor. Drag the cursor vertically over an image or thumbnail to zoom in or out.
- Pan** Changes the cursor to the pan cursor. Drag the pan cursor over an image or thumbnail to pan (drag) the image in any direction. Note that you can only pan left and right in the full-screen viewport.
- Cine** Select this command to cine through images in a series. This command only works if the series contains more than one image, and is open in compare or full-screen view.
- Measure** After selecting this command, click two points on the image in succession: a start point and an end point. A line appears between the two points with the distance between them measured in units of pixels. After the first line is displayed, you can move either of the two points to new locations in order to measure new distances.

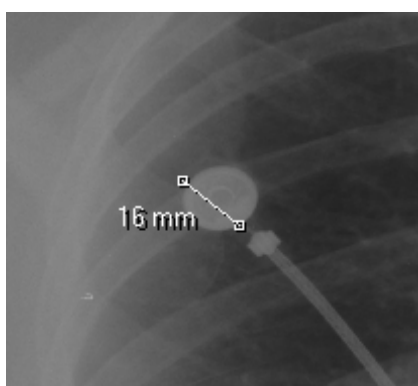


Figure 3.8 Use the Measure tool to measure portions of an image

Measure Pixel After selecting this command, click and hold down the mouse button over any point on the image to display the pixel value at that point. One value is shown for grayscale images, and three points are shown (R, G, and B) for color images.

Measure Angle After selecting this command, click three points on the image in succession: a start point, a vertex, and an end point. Lines appear between the vertex and start and end points, and the resultant angle is displayed in units of degrees. After the first angle is displayed, you can move any of the three points to new locations in order to measure new angles.



Figure 3.9 Use the Measure Angle tool to measure angles in images

Measure Cobb Angle After selecting this command, click four points on the image in succession: a start and end point for line 1, and a start and end point for line 2. The two lines appear along with a third line between the first two lines, and the Cobb angle is displayed (the angle swept by the lines where the vertex is assumed).

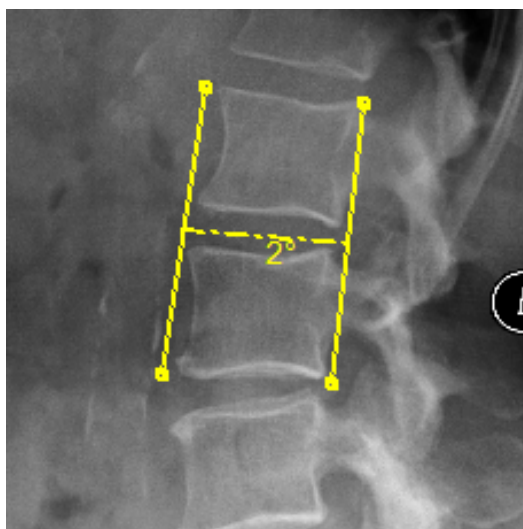


Figure 3.10 Use the Measure Cobb Angle tool to measure angles in images

Invert Inverts black and white values on grayscale images. Has no effect on color images.

Flip/Rotate Shortcut Menu

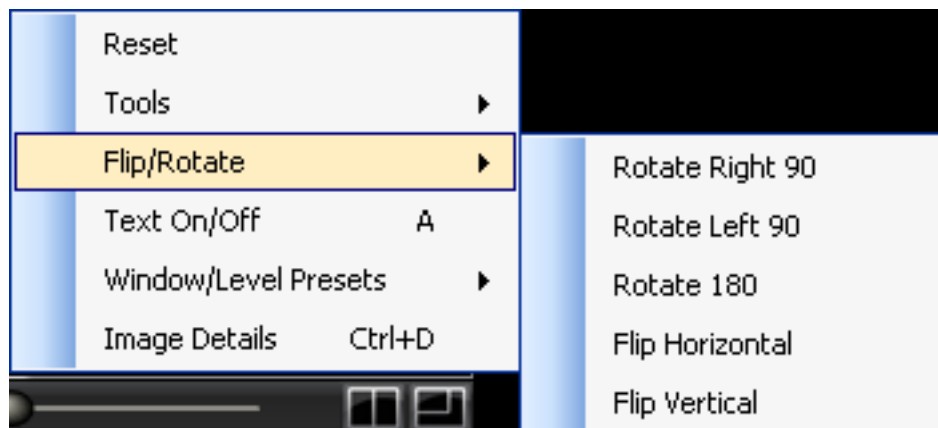


Figure 3.11 Flip/Rotate shortcut menu

- Rotate Right 90** Rotates the image or thumbnail ninety degrees clockwise
- Rotate Left 90** Rotates the image or thumbnail ninety degrees counterclockwise
- Rotate 180** Rotates the image or thumbnail one hundred and eighty degrees
- Flip Horizontal** Flips the image horizontally (on its vertical axis)
- Flip Vertical** Flips the image vertically (on its horizontal axis)

Layout Shortcut Menu

The Layout shortcut menu is only visible when the study is displayed in a viewport, and is useful only if there is more than one slice in the series. Select 1 x 1, 2 x 2, or 3 x 3 from the submenu to display a “tiled” layout of slices. Use the Up/Down arrow keys to scroll slices one-by-one through the tiles, or use the Page Up/Page Down keys to scroll them screen-by-screen.

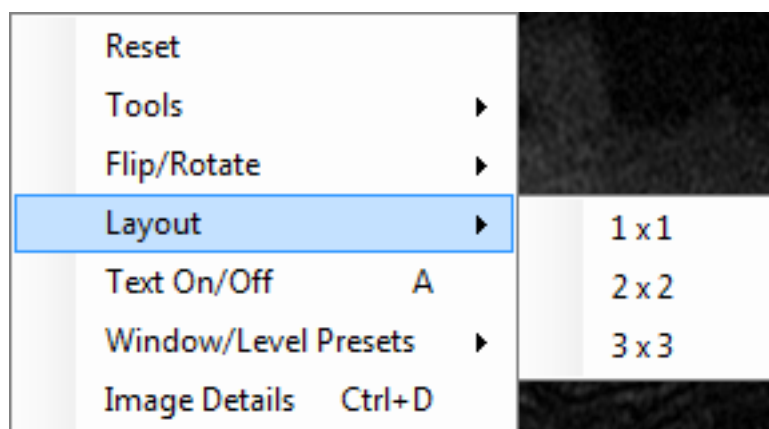


Figure 3.12 Layout command with submenu

If there are not enough slices to fill the layout, portions of the layout are left blank.

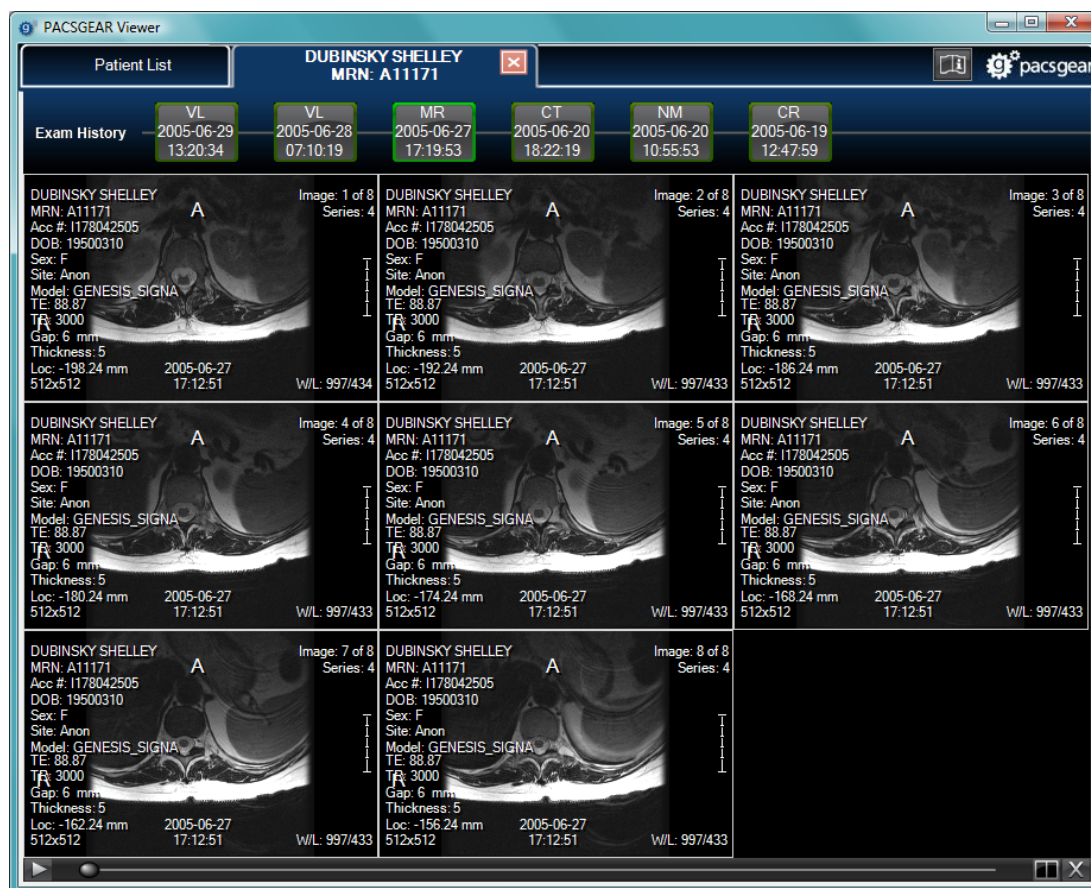


Figure 3.13 A 3 x 3 layout. Each of eight slices are shown in a different tile of the layout.

Window/Level Presets Shortcut Menu

The Window/Level Presets shortcut menu contains a submenu with a selection of preset window/level values appropriate for different body parts or viewing objectives. The presets displayed in the submenu differ depending on the image. The figure below shows examples of two different possible submenus. You can choose the preset most appropriate for your image, and then fine-tune the window/level setting as desired by using the Window/Level tool described above.

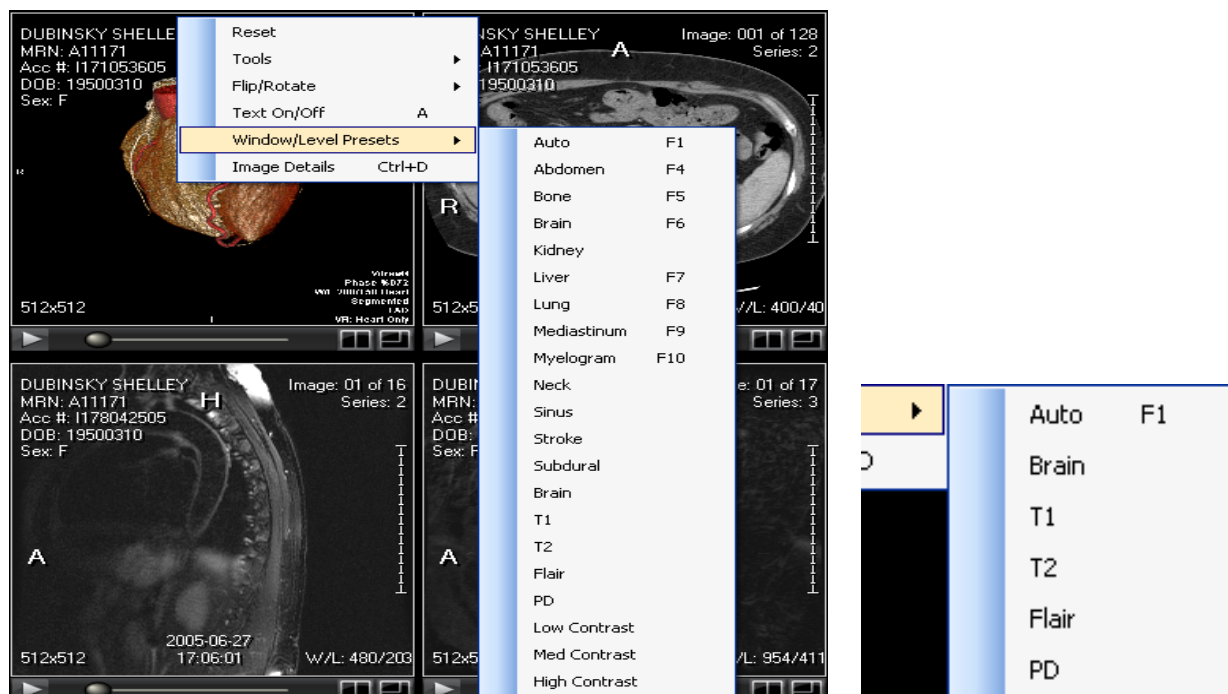


Figure 3.14 Two examples of possible Window/Level Preset submenus

3.3 Keyboard Shortcuts

GEARView Basic provides many convenient keyboard shortcuts for efficient operation.

Window/Level Preset Shortcuts

The following are the default keyboard shortcuts for window/level presets. If desired, these can be edited directly in the presets.xml file located in the GEARView Basic folder.

F4	Abdomen
F5	Bone
F6	Brain
F7	Liver
F8	Lung
F9	Mediastinum
F10	Myelogram

Other Shortcuts

Page Up	Scrolls up one screen in layout view
Page Down	Scrolls down one screen in layout view
Up	Scrolls up one image in layout view
Down	Scrolls down one image in layout view
Left	Jumps to the previous series in layout view
Right	Jumps to the next series in layout view
C	Starts/pauses the selected cine loop
A	Shows/hides overlays
W	Switches to the window/level tool
Z	Switches to the zoom tool
P	Switches to the pan tool
M	Switches to the measure line tool
N	Switches to the measure point tool
V	Switches to the measure angle tool
B	Switches to the measure Cobb angle tool
I	Inverts the current image (grayscale only)
R	Resets the current image
Home	Jumps to first image of the selected series
End	Jumps to last image of the selected series
Delete	Deletes the highlighted measurement overlay

4 Support

At PACSGEAR, your success is our success. If you have any questions or problems, please do not hesitate to contact us.

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